OE FORM 6000, 2/69

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ERIC REPORT RESUME

ERIC ACC. NO.				
ED 042 073				
CH ACC. NO.	P.A.	PUBL. DATE	ISSUE	
AA 000 611		Feb 70	RIEJAN71	

IS DOCUMENT COPYRIGHTED? YES ☐ NO ☒

ERIC REPRODUCTION RELEASE? YES ☒ NO ☐

LEVEL OF AVAILABILITY I ☒ II ☐ III ☐

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TITLE
Experimental Evaluation of the ELS Teacher Education Program. Final Report.

SOURCE CODE	INSTITUTION (SOURCE)
BBB00069	
SP. AG. CODE	SPONSORING AGENCY
FGK00253	

EDRS PRICE	CONTRACT NO.	GRANT NO.
0.50;3.40		
REPORT NO.		BUREAU NO.

AVAILABILITY

JOURNAL CITATION

DESCRIPTIVE NOTE
66p.

DESCRIPTORS
*English (Second Language); *Teacher Education; *Program Evaluation; *Teaching Machines; *Autoinstructional Aids ; Programed Instruction

IDENTIFIERS

ABSTRACT
This report presents the results of pragmatically selected tryouts of the English Language Services "Teacher Education Program" in the Regional English Language Centre in Singapore, the Central Institute of English in Hyderabad, and the Instituto Pedagogico in Caracas. American Institutes for Research, in submitting the present evaluation to the Agency for International Development, under whose aegis TEP was developed, presents criticisms and recommendations concerning various aspects of the materials and equipment involved. Findings of the feasibility check indicated that (1) it was feasible to administer the TEP course as a teacher education program, (2) the course could be administered smoothly, and (3) the optimum application of the system in these three countries had not been reached. It was concluded that TEP is a "workable alternative which warrants serious consideration for a variety of purposes." Appended to this report are an outline description of TEP, a sample progress check, a teacher training costs summary, and a listing of project personnel. For further information on this self-instructional course in training teachers of English as a second language, see ED 036 795. (AMM)

GPO 870-390

ED 042 073

EXPERIMENTAL EVALUATION OF THE ELS TEACHER EDUCATION PROGRAM:

FINAL REPORT

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Submitted to the

AGENCY FOR INTERNATIONAL DEVELOPMENT

(Contract AID/csd-1555)

AU 002 566

by the

AMERICAN INSTITUTES FOR RESEARCH
Pittsburgh, Pennsylvania

February 1970

AA 000 611

AIR
ASIA-PACIFIC

Experimental Evaluation of the ELS Teacher Education Program:

FINAL REPORT

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Submitted to the
Agency for International Development
(Contract AID/csd-1555)

by the
American Institutes for Research
Pittsburgh, Pennsylvania

February 1970

ACKNOWLEDGMENTS

To a remarkable degree, this research project was fortunate in its affiliations with the three host institutions:

- the Regional English Language Centre in Singapore,
- the Central Institute of English in Hyderabad, and
- the Instituto Pedagógico in Caracas;

and with their Directors:

- Mrs. Tai Yu-Lin in Singapore,
- Dr. Ramesh Mohan in Hyderabad, and
- Dr. Gustavo Bruzual in Caracas.

Our counterparts who contributed significantly to the conduct of the research were:

- Mr. Yuen Ngok Onn in Singapore,
- Mr. Loh Peng Yim in Singapore,
- Mr. Koh Beng Lee in Singapore,
- Mr. P. K. Nihalani in Hyderabad, and
- Mrs. Ena Coll de Gruber in Caracas.

And from the inception, Dr. Myron Vent of AID/W has been an interested and sympathetic Project Monitor, whose assistance has often been crucial.

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I. BACKGROUND

The ELS Teacher Education Program was designed to fulfill a need that is world wide. Much of the information needed for modernization and technological development in the present-day world is currently available in only a few languages. It is imperative, therefore, that relatively large numbers of people in developing countries learn to use one of the few major languages of the world. For many countries the obvious choice at this time is English. This language has a wide distribution in terms of both native and non-native speakers, and has an extremely wide geographical distribution. Many developing nations, for a variety of historical or practical reasons, look to English as the most promising channel through which information can flow to the populace. Other nations consider a widespread knowledge of English as a valuable secondary linguistic tool.

Although it is estimated that there are more speakers of English than of any other language in the world, the number who are qualified to teach it as a second or foreign language is extremely limited. The number of persons qualified to train teachers in this field is even more limited. The demand for English teachers since World War II has been so great that colleges and universities have been able to produce only a small portion of the large numbers of teachers required.

In response to this problem the Teacher Education Program (TEP) was developed by English Language Services (ELS) under contract with A.I.D. Its objective is to train people who already know English to become effective teachers of English; and its unique feature is that it is entirely self-instructional, so that a master teacher need not be present while trainees go through the course. Intended primarily (though not exclusively) for use overseas, TEP will be used most frequently for the training of foreign nationals, who will be expected, after completing the course, to

be able to teach English to students in their own countries who can speak only a little English or no English at all.

So that the course will be applicable to many different situations, it does not specify the syllabus or the textbook that the trainee should use in teaching his classes. Rather, the focus is on basic techniques that he should be able to apply irrespective of the particular text or syllabus his future teaching jobs may require. Whatever his assignment, and whoever his students, he is to perform as effectively as if he had been prepared for teaching in the traditional way.

In going through TEP, the trainee works at a specially-designed console that contains a built-in tape recorder and film projector. His text is a series of five Workbooks that give him detailed step-by-step instructions. In accordance with these instructions, he reads lessons, listens to tapes, watches (and interacts with) films, does practice exercises, takes tests -- all at his own pace without professional supervision. At the end of the course, which was initially estimated to take about 200 hours, he is to be ready to teach.

An initial version of TEP was completed on 31 May 1965, and tried out for "de-bugging" purposes in the ELS Washington Office on a sample of seven trainees. This sample included three native and four non-native speakers of English, all of whom had an excellent command of the language (e.g., a median score at the 90th percentile on the Lado Test), and who were in this respect atypical of the overseas groups for which TEP is intended. But for a first dry run, they were entirely adequate, and the results of the tryout suggested a variety of needed modifications.

The changes indicated by this tryout were made, and a revised version was published in November 1966 by Washington Educational Research Associates (WERA), the successor to ELS. New features included

a completely redesigned console -- a fiber glass shell that "enwraps" the trainee to minimize interference when consoles are installed in close proximity to each other -- and a reorganization of the printed materials to make a greater proportion of them reusable, as well as numerous specific changes in text and procedures. The result was an improved system suitable for use in the field tryouts that were to be undertaken as the final step in readying TEP for widespread practical application.

The Agency's original plan for the conduct of these field tryouts was to fund concurrent studies in four developing countries to be selected, one each, from the four major geographical Regions. But, before this plan could be implemented, an opportunity arose for doing the Africa phase as part of an ongoing English language project in Nigeria that was being carried out by Southern Illinois University with funds provided by the Ford Foundation. The Foundation agreed to augment the SIU grant to make possible this additional component and A.I.D. agreed to release the TEP materials to SIU for experimental use; and the Nigeria tryout was begun on 28 November 1966 with an initial sample of six trainees.

The evaluation techniques used in Nigeria were developed expressly for this purpose by the American Institutes for Research under a consulting arrangement with SIU. AIR staff worked out the experimental design,[1] constructed a series of "before" and "after" proficiency tests to measure the progress of the trainees, prepared observational checklists

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[1] Schwarz, Paul A. A preliminary evaluation of the ELS Teacher Education Program: the experimental design. Carbondale: Southern Illinois University, October 1966.

to yield diagnostic as well as evaluative data on the various segments of the course, and worked jointly with SIU on the analysis of results and report preparation.[2,3]

The work in Nigeria provided a significant headstart for the conduct of tryouts in the other three Regions. In addition to the development of preliminary instruments and an intensive analysis of TEP, the early tryouts were of considerable value in the formulation of the ideas which governed AIR's subsequent approach to the world wide assessment. Our consideration of the complex issues which arise in deciding how a program of this type is to be assessed led to a focus which varies from the usual evaluative models. First it became evident that we could not possibly investigate all of the potentially significant variables that in varying combination would determine TEP's utility as a solution to some specific instructional problem. It was equally evident that we could sample only a very limited number of TEP's potential applications. And finally we became convinced that no one could predict which variables and which applications would be maximally informative for the total possible audience. As a consequence, the AIR project was designed to focus on the operational decisions regarding TEP which were most likely to arise in the countries hosting the tryouts. If one of our host countries was considering TEP as a replacement for a part of its regular teacher-training curriculum, then a tryout would be designed to show TEP's cost-effectiveness for that usage.

The report which follows presents the results of these pragmatically selected tryouts in the three countries in which we worked.

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[2] Van Syoc, Bryce and Schwarz, Paul A., The Nigeria Tryouts of the ELS Teacher Education Program: Report of Tryout I. Carbondale: Southern Illinois University, March 1967.

[3] Van Syoc, Bryce and Schwarz, Paul A., The Nigeria Tryouts of the ELS Teacher Education Program: Report of Tryout II. Carbondale: Southern Illinois University, August 1968.

II. CONDUCT OF THE TRYOUTS

A. Sites. The host institutions for the evaluation studies were:

- the Instituto Pedagógico in Caracas, Venezuela;
- the Central Institute of English in Hyderabad, India; and
- the Regional English Language Centre (of the Southeast Asia Ministers of Education Organization) in Singapore.

Each of these institutions allocated the required space for the three consoles and accompanying films, tapes, workbooks, and the reference library.

In Hyderabad the tryout was housed on the first floor of the administration and classroom building. The consoles were placed in a 14 by 20 ft. room which was air conditioned and sound treated. Sets of shelves along two walls provided for storage of the materials. Out-of-console space was also provided and a smaller connecting room was used as an office for the personnel.

In Singapore the tryout was housed in a bungalow on the grounds of the Regional English Language Centre with air conditioning and shelving installed for the tryout. An office was provided for the AIR technician.

In Caracas the TEP was housed in a 21 1/2 x 11 1/2 ft. room at Pedagógico. Shelves were provided for the equipment; air conditioning was not required.

In each situation, funds for remodeling and installation of air conditioners, etc., were provided by USAID, the host country governments and/or project development funds of the participating institutions.

B. Phasing. The chronology of the tryouts is presented in Figure 1 below:

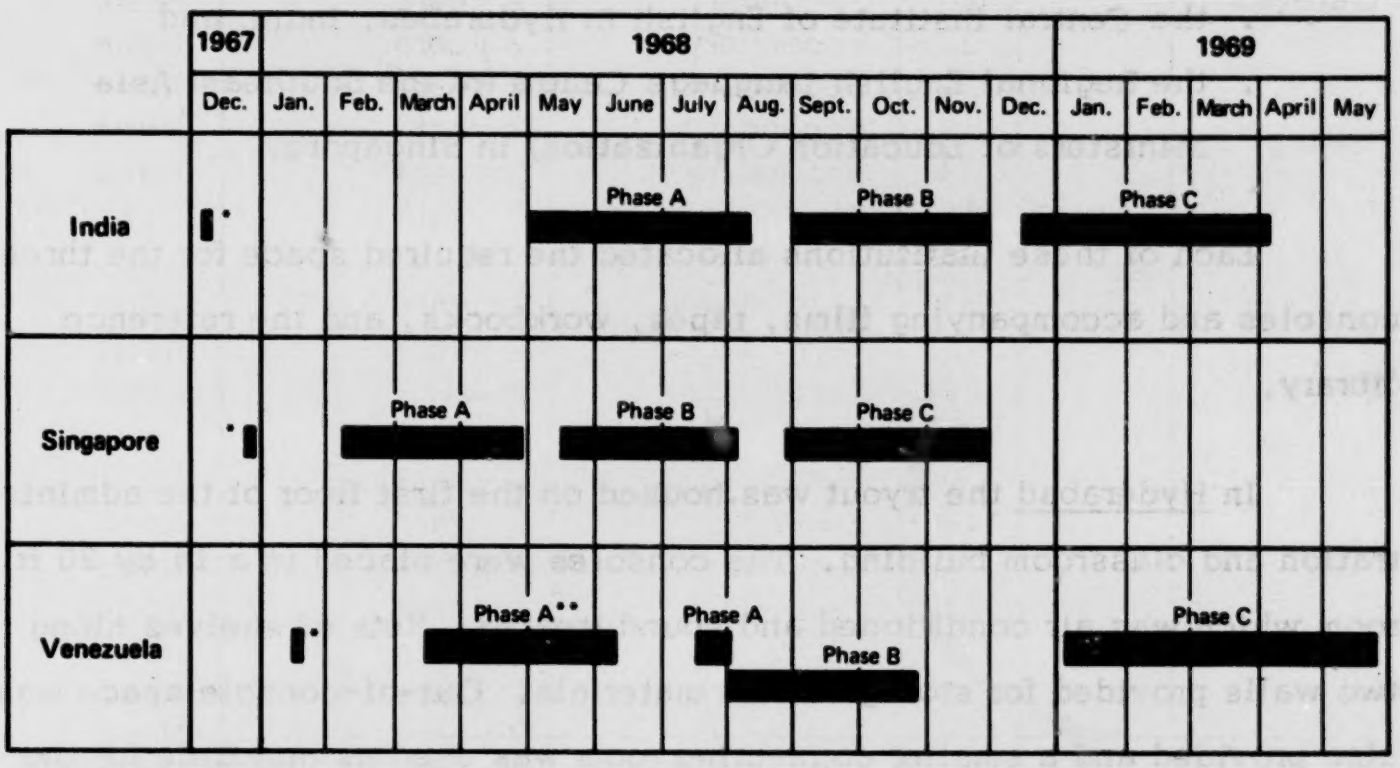

Figure 1: Schedule of TEP Field Work

C. Trainees. Table 1 presents the relevant background information for the 60 trainees who completed TEP during the nine tryouts. It can be seen that the Caracas and Singapore groups were homogeneous with regard to education and teaching experience while the Hyderabad group was characterized by a diversity of pre-TEP experience and had more formal education.

Table 1

Background of the Trainees

Site	Tryout	Age	Basic Education	Formal Teacher Training	Teaching Experience
Caracas	I	20	Secondary	2 years	None
		22	Secondary	2 years	None
		21	Secondary	2 years	None
		19	Secondary	2 years	None
		33	Secondary	2 years	None
		18	Secondary	2 years	None
	II	37	Secondary	2 years	None
		18	Secondary	2 years	None
		23	Secondary	B.Ed.	None
	III	26	Secondary	2 years	1 year
		19	Secondary	2 years	None
		20	Secondary	2 years	None
		21	Secondary	2 years	None
		30	Secondary	2 years	None
		23	Secondary	2 years	None
		19	Secondary	2 years	None
		23	Secondary	2 years	None
		33	Secondary	2 years	None
		19	Secondary	3 years	1 year
		22	Secondary	3 years	None
		20	Secondary	2 years	None
		27	Secondary	3 years	1 year
		20	Secondary	3 years	None
Hyderabad	I	32	Secondary	None	11 years
		29	1 yr.college	None	10 years
		23	B.A.	None	1 year
		34	2 yrs.college	1 year	15 years
		27	2 yrs.college	None	7 years
		35	Secondary	None	15 years
	II	36	B.A.	B.Ed.	15 years
		26	B.A.	--	2 years
		38	B.A.	B.Ed.	12 years
		34	M.A.	--	7 years
		28	M.A.	B.Ed.	4 years

Table 1 (Continued)

Background of the Trainees

Site	Tryout	Age	Basic Education	Formal Teacher Training	Teaching Experience
Hyderabad	III	34	M.A.	B.T.	9 years
		46	B.A.	B.T.	20 years
		35	B.A.	B.Ed.	13 years
		26	M.A.	L.T.	4 1/2 yrs.
		32	M.A.	--	12 years
		28	B.A.	L.T.	2 years
		26	M.A.	--	3 1/2 yrs.
		35	M.A.	M.Ed.	6 years
Singapore	I	32	Secondary	TTC Certificate	10 years
		31	Secondary	TTC Certificate	10 years
		28	Secondary	TTC Certificate	8 years
		37	Secondary	TTC Certificate	17 years
		26	Secondary	TTC Certificate	7 years
		32	Secondary	TTC Certificate	12 years
	II	32	Secondary	TTC Certificate	13 years
		32	Secondary	Normal Trained	12 years
		37	Secondary	---	14 years
		29	Secondary	TTC Certificate	11 years
		23	Secondary	TTC Certificate	6 years
		23	Secondary	1 year	4 years
	III	27	Secondary	TTC Certificate	6 years
		25	Secondary	TTC Certificate	7 years
		25	Secondary	TTC Certificate	8 years
		28	Secondary	TTC Certificate	9 years
		24	Secondary	TTC Certificate	7 years
		28	Secondary	TTC Certificate	10 years

D. Applications Evaluated. Table 2 summarizes the potential uses of TEP which were evaluated. In Hyderabad, TEP was considered as a potential substitute for two existing programs; in Singapore, TEP's potential use was as a means of providing training to teachers not currently covered by Singapore's excellent TESL programs; in Caracas, TEP was considered as an intensive course for teachers during the summer recess, and TEP components were considered as substitutes for specific course offerings of the Instituto.

Table 2. Applications Evaluated

	Tryout		
	I	II	III
Singapore	Feasibility	Feasibility plus in-service course for TTC graduates with no TESL training	Course for English Stream Primary-One teachers
Hyderabad	Feasibility	Feasibility + Use of TEP as a substitute for the four-month Central Institute of English (CIE) certificate course for secondary school teachers	Compare TEP with English Language Training Institute (ELTI) courses for secondary teachers
Caracas	Feasibility	Feasibility + Use of TEP as an intensive 8 week course during summer recess for in-service training of teachers	The utility of TEP sections as substitutes for specific courses of the Instituto Pedagógico

Note: So many TEP modifications were made during the first tryout (Feasibility Check) that the second tryout is also a test of feasibility for the revised program in addition to the specific application noted.

III. FINDINGS OF THE FIRST TWO TRYOUTS

A. Conclusions and Recommendations from the Feasibility Check.[4] At the end of the feasibility check, the data were analyzed to determine whether a) to leave the system as is and go on to the formal evaluation; b) to make minor adjustments in the system, and go on to the formal evaluation; c) to make major adjustments in the system, and repeat the feasibility check before going on to the evaluation; or d) to give up.

The findings of the feasibility check indicated that it was feasible to administer the course as a teacher education program; that the course could be administered smoothly; but that the optimum application of the system in these three countries had not been reached. The specific conclusions were as follows:

1. The electronic and mechanical components of TEP were serviceable and effective.
2. At each site, the AIR Supervisor assigned to the project and the local technicians were entirely capable of meeting the maintenance needs of the equipment, and the services of a U.S. technician were not necessary.
3. There were frequent minor malfunctions such as the jamming of films that indicate that there must be a monitor available for correcting these problems. This individual should also manage the administrative tasks, such as scheduling, maintaining records of attendance, etc. Local counterparts are capable of meeting these needs and the services of a U.S. technician are not required.

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[4] As previously reported in Report of the Feasibility Check, American Institutes for Research, Pittsburgh, January 1969.

4. The Orientation Manual facilitated orientation procedures and eliminated most initial confusion but an actual demonstration of use of the equipment might be the most efficient orientation. The Manual would then serve as a reference source.
5. The trainees developed great facility in using the equipment and in following the self-instructional procedures and they were able to progress through the course with little outside assistance.
6. The materials require substantial proofreading and editorial review. The software needs to be checked more completely and adequately before packaging and shipment.
7. The trainees exhibited a high level of effort throughout the twelve to fourteen weeks of the course. However, the present 275-300 hours needed to complete the course could be reduced by careful editing to prune repetitious materials and by standardizing the course directions. This should further maintain the trainees' interest and attention.
8. Trainees did not complain about working at the consoles for three to four hours at a time.
9. The trainees in Singapore who were observed in the classroom were not putting the TEP techniques into practice. On the other hand, the Caracas Supervisor reported that the three teachers taking selected portions of TEP were much more enthusiastic about using TEP than were the regular trainees who were still students. The extent to which TEP is incorporated into the trainee's teaching methods will be examined more thoroughly in the next tryouts when formal classroom observations will be carried out as a follow-up to the TEP course.
10. The initial estimate of costs indicated that it might be desirable to eliminate use of the fiberglass console and to consider sharing of films.

11. The measures of teacher skills in discrimination and grammar did not reveal significant gains but for the most part, trainees' scores improved. Evaluation of TEP's effectiveness in producing effective teachers will be reported for subsequent evaluations through use of the Skills Inventory and classroom observation materials.

Based on the experience of the feasibility check, supervisors and local officials recommended that the first formal tryout be conducted and that extensive revision to the program was not necessary. It was planned that India and Singapore would each select six teachers to take the course on a 12-week schedule and Caracas would evaluate an intensive course where the trainees will work six hours a day.

The following specific recommendations were also made:

1. Corrections be made to existing material.
2. A set of "Progress Checks" be designed that consist of short ten-minute tests that measure the trainee's attainment of the TEP content. There would be 21 such tests spaced throughout the entire course. These Progress Checks would permit the supervisors to determine what areas of the course were not being learned.
3. To eliminate trainee "dropout," credit and/or stipends be assured to trainees who complete the course.
4. At least one full-time counterpart be available to assist the supervisors as a monitor.

B. Conclusions and Recommendations from the First Formal Tryout.[5] The overall conclusions were that this tryout progressed more smoothly than

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[5] As previously reported in Report of the First Formal Tryout, American Institute for Research, Pittsburgh, April 1969.

the feasibility check; that the program could be used as a substitute, as a replacement, and as an intensive course of six hours per day; and that the program changes suggested in the Report of the Feasibility Check are still most necessary if TEP's optimum effectiveness is to be reached.

The specific conclusions were as follows:

1. The electronic problems were fewer during this tryout although problems with accidental tape erasure and recording were reported at all sites, as was film jamming. The new tape cassettes and projector system now available from ELS should eliminate this problem.
2. Repair by a skilled technician was not neccesary and the monitor was able to make the minor repairs and replacement adjustments.
3. In the Caracas intensive tryout, the consoles were capable of providing a comfortable study setting without serious trainee fatigue for periods up to eight hours daily. Trainees generally took a ten to fifteen minute rest period in each four-hour session.
4. The self-instructional procedures were more efficient than in the previous tryout due to the revised workbook instructions, the revised Orientation Manual, and the minor corrections made to the materials.
5. The criticisms of content remain the same as in the feasibility check in that the sections on stress and intonation are not programmed adequately; there is considerable discussion as to the place of complex transformational grammar in TEP; the TESL approach of TEP is unacceptable to several Southeast Asia countries and all sites reported that the teaching films do not provide a realistic classroom situation.

6. The Caracas Supervisor concluded that since the International Phonetic Association System is used in most Venezuelan phonology teaching, the phonological material in TEP would be more valuable if the IPA alphabet were substituted for the Trager-Smith alphabet which is presently being used.
7. The attitude and motivation of the trainees remained favorable throughout the course. This included the trainee attitude during the long hours of the Caracas intensive tryout. The Hyderabad Supervisor only indicated flagging interest of the trainees during Workbook V.
8. TEP's effectiveness in achieving its teaching objectives was not at the 90 percent level of achievement on the Progress Checks. However, considering the length and diversity of the entire TEP course, the average scores of 64%-73% of the total possible score on the final Progress Check is probably as much as would have been learned in a conventional classroom situation. On the first four Progress Checks given in Caracas and Singapore, the average score for all trainees on all the Checks was quite high; 74%-95% of the total possible scores.
9. The Skills Inventory scores could not be used as an adequate measure of TEP's effectiveness in this tryout as they were only available for use as a post-test in Caracas and Hyderabad.
10. The use of the Skills Inventory as a pre-test and post-test instrument in the final tryout will be necessary to establish the amount of learning attributable to TEP.
11. Trainees needed 250-300 hours to complete TEP. The Caracas trainees were unable to finish the course in the eight weeks originally scheduled. This was due to the failure of the trainees to attend a satisfactory number of six- to eight-hour days because of other part-time commitments. An eight week period

may be too short and a safety factor of up to one hundred hours may be necessary to allow for absenteeism and/or slow trainees. This is a problem if TEP is to be used in institutions where courses normally run eight weeks.

Thus, while the tryout operations were smoother, the equipment problems remained and the effectiveness measures were yet to be completed.

The findings of this tryout and the observations of the site supervisors led to three categories of recommendations:

With respect to the TEP system, it was recommended that:

1. A demonstration of the TEP equipment be given during the orientation period in order to evaluate whether a demonstration is most effective and efficient in teaching the use of the equipment.
2. Revised instructions remain as implemented during the first formal tryout and supervisors continue to develop and incorporate any extra phonological material that is relevant to local speech.
3. ELS should include large classes and classes of children in the remaking of the TEP films and stress a situational approach in TESL methodology.
4. A new tape recorder that eliminates accidental record and erase situations should be incorporated as part of the equipment as soon as possible.
5. The overall time of the course should be reduced through reorganization and editing.

With respect to testing, it was recommended that:

1. The Skills Inventory be administered to all trainees as a pre-test and post-test and control group testing take place at all sites;
2. The Progress Checks be used again as a measure of TEP's effectiveness in teaching its objectives. Caracas will adjust these Checks to fit the portions of TEP being administered in each section; and
3. There should be classroom observation of all trainees; it was also suggested that if the trainees from the first formal tryout are available, that they be observed in their teaching situation.

With respect to TEP's final application at each site:

1. In Singapore, six Singapore primary-one teachers from English medium schools will be chosen as trainees. They will already be teachers of English but will have had no specific TESL training.
2. In Hyderabad, the tryout will also be a comparative evaluation of TEP and an existing program of teacher training. The trainees will be teachers who are taking TEP instead of courses at State English Language Teaching Institutes.
3. In Caracas, the Instituto Pedagógico will evaluate using portions of TEP as separate courses. A sectional application of TEP will be used with trainees each taking a Workbook of TEP: a) Phonology, Workbook I; b) Grammar, Workbook II; c) Classroom Technique, Workbook IV and Volume 1 of Workbook V; and d) General Methodology, Workbook V, Volumes 2 and 3.

IV. THE FINAL TRYOUT

A. The Applications Evaluated. As shown in Table 2, page 9, the final tryouts considered TEP as:

- a vehicle for giving TESL training to primary-one teachers in English stream schools of Singapore. These teachers are, in fact, teaching English as a second language but have not had TESL training;
- an alternative to the various state English Language Training Institutes in India; and
- substitutes for various courses currently taught in the Instituto Pedagógico. For this purpose, each TEP trainee took one section of the program,[6] so that each section would be compatible with a one-semester course meeting daily for fifty minutes.

B. Procedures.

1. Progress Checks. The Progress Checks were developed by AIR specifically for use in the TEP tryouts. They consist of twenty short tests (ten to fifteen minutes each) administered at intervals of ten to fifteen TEP-instructional hours. Progress Checks are administered individually since trainees working at their own pace reach check points at different times.

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[6] For this application, TEP was divided into four subject areas, as follows:

Section I: Phonology, WBK I (Vol 1-5)
Section II: Grammar, WBK II (Vol 1-6)
Section III: Classroom Techniques, WBK IV (Vol 1-7)
Section IV: General Methodology, WBK V (Vol 1-3)

The short, one volume Workbook III on Language Learning was omitted.

Progress Checks were designed to measure the internal effectiveness of TEP; test items were taken directly from TEP exercises and simply test whether trainees can demonstrate mastery of the material already covered. For purposes of illustration, Progress Check #7 is included as Appendix B.

2. Skills Inventory. The development and rationale for the Skills Inventory is presented in detail elsehwere.[7] The SI is a research tool designed to assess performance along the major dimensions of TESL. The Inventory consists of a series of tests organized in 8 content areas:

   a. Grammar
   b. Phonology
   c. Spelling
   d. Composition and Style
   e. Comprehension and Appreciation
   f. Vocabulary
   g. Idiom and Usage
   h. Handwriting and Orthography

   Within each content area, there are measures of:

   a. the ability to discriminate between correct and incorrect student performance;
   b. the ability to produce correct performance;
   c. knowledge of, and ability to use appropriate techniques of explanation of correct and incorrect performance;

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[7] Krug, R E. and Horst, D.P., The Skills Inventory, American Institutes for Research, Pittsburgh, February 1970.

d. knowledge of theoretical factors specific to TESL; and

e. knowledge and background skills that enable the teacher to analyze teaching problems and devise solutions.

Unlike the Progress Checks, which test TEP materials directly, the SI was designed to be program-independent. None of the specifics of TEP are included; some content areas which TEP ignores are included because they are covered by other TESL courses; items were designed with the intent that no one programmatic approach would be either rewarded or penalized. One can never prove the absence of bias; it is asserted that the developers of the Skills Inventory made every effort to make their instrument independent of TEP and there are no obvious signs of failure.

One kind of bias doubtless characterizes the SI however. While every attempt was made to avoid items where British and American teachers of English would differ, the implicit standard is American English and this standard is acknowledged in the test instructions.

3. Forms and Checklists.

a. Observer's checklist. This form had two main sections: one on difficulties with equipment, workbooks or forms, deficiencies in trainee performance, and deviations from standard procedures; and one on sources of confusion and evidences of trainee frustration with the program. The supervisor recorded the date and time of each observation, the lesson the trainee was working on at the time, and a brief summary of what occurred during the observation.

b. Report of significant event. This form was used to record all incidents of importance that occurred between regular hourly observations. The supervisor described the incident, action taken, and the implications of the event.

c. Procedural difficulty form (Caracas only). This form was designed to analyze procedural difficulties brought about by the sectional application of TEP. The supervisor recorded the component (tape, film, worksheet) to which the problem was related and the position as specifically as possible. If the difficulty was created by a dependency on specific material presented in another section, the supervisor identified the item(s) and location of the material. Finally, the supervisor estimated the extent of programming change necessary to correct the problem and summarized what actions were taken on the spot to enable the trainee to proceed.

4. Terminal Interviews. During the last few days, the supervisor held an individual interview with each trainee. The trainee was questioned about his reaction to TEP, to the way material was presented, and was asked to make comparisons of TEP and regular classroom courses in terms of organization, content, and the opportunities provided for practicing language skills. Trainees were also questioned about the relevance of TEP to their future teaching. In Caracas, interviews were conducted in Spanish; at the other two sites in English.

C. Results.

1. The Effectiveness of TEP.

a. Progress Checks. The results of the Progress Checks for all sites combined are presented in Table 3. The number of trainees taking each check is variable because the sequential nature of the Caracas tryout resulted in different numbers of trainees completing a given portion of TEP. Overall, the results are consistent with previous findings. A 90% criterion, which is

Table 3. Progress Check Scores

Check	Number of Trainees	Score (percent correct)	Check	Number of Trainees	Score (percent correct)
1	21	89%	11	19	71%
2	21	75	12	19	78
3	21	80	13	19	88
4	20	83	14	19	63
5	20	67	15	17	75
6	21	95	16	20	82
7	20	87	17	20	85
8	20	89	18	20	64
9	20	85	19	20	76
10	20	93	20	20	78

sometimes cited as the standard for self-instructional programs, is reached on but 2 of the 20 Checks. Nine additional Checks show average scores in the 80-89% range. Only two Checks show average performance below 70%. The average for all 20 Checks is 80%.

Progress Check #21, which is a review of all of TEP, was given in Hyderabad and Singapore (Caracas trainees did not go through the entire program). For the 14 trainees who took Check #21, the average score was 72%. This is a measure of retention rather than of acquisition and is not directly comparable to the scores earned on Checks #1-20. A reasonable comparison would be with a Final Exam composed of objective items tapping all aspects of a regular classroom course, but we have no formal comparison of this kind to offer.

All in all, the Progress Check results suggest that:

1) Some revisions to TEP are necessary if the program's potential is to be reached. The error data on the Progress Checks and other evidence (observational checklists) are diagnostic in this regard.
2) The level of student performance is sufficiently high to argue for evolution rather than revolution. TEP is an adequate program which can be improved.

b. Skills Inventory. The SI was given as a pre- and post-test to all TEP trainees[8] and to 12 Indian teachers who were attending the English Language Training Institutes at Allahabad or Chandigarh.[9] Background information on this Comparison Group is presented in Table 4 in the same form as was given for TEP trainees in Table 1, pages 7 and 8.

The backgrounds of the Comparison Group is quite similar to the Hyderabad TEP trainees; both groups are more highly educated than TEP trainees from Caracas and Singapore.

Since the tests which represent the eight content areas are of unequal length and unequal difficulty, raw scores cannot be

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[8]Caracas trainees took some combination of 5 of the 8 content areas, depending on the section to which they were assigned. It would have been better had they taken all areas, but such was not the case.

[9]These are the two institutions from which TEP trainees were drawn for the final tryout.

Table 4. Background of the Comparison Group

ELT	Age	Basic Education	Formal Teacher Training	Teacher Experience
Chandigarh	33	M.A.	B.Ed.	12 years
	34	B.A.	B.Ed.	15 years
	32	M.A.	B.T.	10 years
	34	B.A.	B.T.	13 years
	24	B.A.	B.T.	2 years
	32	M.A.	B.T.	10 years
Allahabad	33	M.A.	L.T.	not known
	36	M.A.	L.T.	not known
	32	M.A.	--	10 years
	29	B.A.	B.Ed.	3 years
	36	M.A.	B.T.	4 years
	27	M.A.	--	3 years

compared directly. To facilitate comparison, all pre-test score distributions were converted to scaled scores, with means of 50 and standard deviations of 10. The shapes of the distributions were not affected.

Pre- and post-test means and standard deviations for TEP and Comparison Groups are presented in Table 5. A simple analysis of variance was applied to these data. The F ratio for groups (TEP vs Comparison) was significant at the .05 level; the F for Conditions (Pre- vs Post-test) was significant at the .01 level. There was no significant interaction. A more complex analysis might well show a Scale X Condition interaction but we do not believe our data warrants a detailed comparison of groups on individual scales. We are content

Table 5. Skills Inventory Scores Before and After Training

Group	Scale	N	Pre M.	Pre s.d	Post M.	Post s.d
TEP	1. Grammar	20	53.0	8.1	55.1	9.4
	2. Phonology	26	49.7	11.9	59.6	11.5
	3. Spelling	26	48.8	12.6	54.6	11.7
	4. Composition and Style	14	53.7	9.5	57.0	10.7
	5. Comprehension and Appreciation	32	50.7	10.5	54.7	8.1
	6. Vocabulary	32	49.2	10.5	55.2	9.4
	7. Idiom and Usage	32	50.1	10.4	52.6	9.6
	8. Handwriting	14	50.5	8.0	51.2	9.5
Comparison						
	1. Grammar	12	44.2	7.0	42.4	8.4
	2. Phonology	12	49.1	9.8	61.5	9.1
	3. Spelling	12	52.2	7.2	54.6	10.2
	4. Composition and Style	12	46.7	10.0	49.1	10.4
	5. Comprehension and Appreciation	12	48.3	8.0	47.3	11.3
	6. Vocabulary	12	50.3	9.2	54.2	11.4
	7. Idiom and Usage	12	48.2	7.5	48.8	8.5
	8. Handwriting	12	48.1	12.3	49.2	11.3

with the demonstration that both TEP and the comparison course led to significant gains on the SI, and that the TEP gains were the greater. Summing over scales as in Table 6 below, shows the overall effect.

Table 6. Comparison of Groups: Mean Total Score on Skills Inventory

	Pre	Post
TEP	50.7	55.0
Comparison	48.4	50.9

While avoiding a scale by scale discussion, a few comments on the data of Table 5 are in order. First, it is evident that both groups made their greatest gain in the area of Phonology. It may be that living in an instructional environment where English is employed regularly is as important as the specific program content in increasing one's mastery of spoken English. The magnitude of gains in Phonology appear quite impressive. Stated in terms familiar to the classroom teacher, the average TEP trainee advanced from the 49th to the 83rd percentile on SI norms, while the average member of the Comparison group moved from the 46th to the 87th percentile.

A possible source of change in SI scores is, of course, a practice effect from taking the same test twice. While we would expect a 15-hour battery, taken twice, three to four months apart would show minimal gains from practice, we are aware of this possible criticism. In this regard, the results on SI Handwriting are comforting. TEP trainees, on the average, gained .07 of one standard deviation, while the Comparison group gained .1 of 1 s.d. We are content to take these modest changes as an estimate of practice effects and to assume that the larger gains show real improvement. For convenience, gains for both groups, expressed in standard deviation units, are shown in Table 7.

Table 7. Average Gains in Skills Inventory Scores

Scale	TEP	Comparison
Grammar	.215	-.175
Phonology	.992	1.242
Spelling	.577	.241
Composition and Style	.329	.233
Comprehension and Appreciation	.413	-.108
Vocabulary	.591	.383
Idiom and Usage	.250	.066
Handwriting	.071	.108

c. Trainee acceptance of TEP. Trainee motivation was excellent, as in all previous tryouts. The by now common difficulty with stress and intonation and the equally common confusion over the role of transformational grammar were again experienced, but in neither case were the trainees disenchanted with TEP. Trainee acceptance remains a strong plus for the programs.

2. Operational Data

a. Use of TEP sections. A critical factor in assessing a sectional application of TEP is the extent of the procedural difficulties which arise because an exercise requires knowledge of material covered in another section. The findings from the Caracas try-out were most encouraging. The difficulties which arose were never serious and were correctable. The principal problems were the following:

1) All trainees experienced some difficulty in understanding exercise instructions at the beginning of their respective sections. This problem eventually disappeared as trainees became more accustomed to TEP. Difficulty with instructions in early parts of the course was also conspicuous during tryouts one and two, and it is apparent that trainees who are not familiar with programmed instructions will experience minor difficulties with TEP at the beginning. Assistance from a monitor is helpful, and keeps trainees from getting bogged down with exercise instructions.

2) A second procedural difficulty occurred in the instructional area of Grammar. Trainees in this section experienced difficulty in completing, satisfactorily, the exercises on English stress and intonation. Since this difficulty was not

apparent in earlier tryouts, it is assumed to have been caused by the omission of certain exercises dealing with intonation, which are located in the last volume of Phonology. Although all trainees who experienced difficulty in this section managed to meet the required criteria by mere repetitions of the exercises, this procedure caused some frustration, since in most cases several repetitions were necessary. In the future, an effective solution might be to guide trainees through additional material on the subject, in particular the Lado and Fries texts which are included in the TEP reference library and which treat intonation in some detail.

3) In the instructional area of Classroom Teaching Techniques, trainees experienced difficulty in using TEP's phonemic symbols. The difficulty in this case was caused by the omission of the entire instructional area of Phonology, where the TEP phonemic alphabet is taught. The problem was solved, temporarily, by inserting a sheet in the trainee's workbook giving the equivalent of TEP symbols in the familiar IPA alphabet which is used in the Instituto Pedagógico's classroom program. The same could be done with any other phonemic alphabet similar enough to TEP's. However, it is necessary that trainees be familiar with at least one phonemic alphabet before proceeding through the Classroom Technique section, since Minimal Pair Writing, Isolating Sounds to Correct Pronunciation, and a number of other techniques presented in the section require a knowledge of Phonetics.

4) Trainees working in the instructional area of General Methodology experienced difficulties with several exercises in the first volume of this material, the difficulties being

caused by the fact that some exercises required a knowledge of the Classroom Techniques instructional area. In the future, it would be better in sectional applications to include the first volume of WBK V in the Classroom Technique instructional area instead of in General Methodology.

It is evident that only minor modifications are required to avoid these difficulties. TEP sections can be used in isolation from the larger program.

b. Equipment. The electronic and mechanical equipment continued to function well. The minor malfunctions reported for previous tryouts continue to occur but do not represent an obstacle to the practical use of TEP.

D. Discussion. The final tryout has provided some information not available from earlier tryouts.

1. The Skills Inventory data provide the first measure of program effectiveness against an external criterion. The data show quite clearly that TEP produces gains on an objective measure of some skills essential to performance as a teacher of English as a second language.
2. The classroom observations, however incomplete, show that at least some of the TEP materials are taken into the teacher's repertoire of classroom behavior.
3. The sectional application in Caracas is of considerable importance; it demonstrates that TEP can be considered as a set of modules, each of which can stand alone. This evidence of flexibility greatly expands the potential uses of the program.

With these three exceptions, the results of the final tryout are simply replications of the findings of the preceding evaluations. There were no surprises or inconsistencies in the findings on trainee motivation, equipment performance, or program strengths and weaknesses.

V. THE CURRENT UTILITY OF TEP

In this and preceding reports, data have been reported on eleven separate tryouts in four nations: India, Nigeria, Singapore and Venezuela. Three additional tryouts in Lebanon will soon be reported by the American University of Beirut. By almost any standard, TEP has been given a fair test in a reasonable sample of situations. In this chapter, we will attempt an overall assessment of the program; what are its strengths and weaknesses, its utility in solving the problems for which it was designed, its most likely uses, and its internal and external effectiveness. The presentation will be organized around a series of questions; hopefully the questions that a potential user would ask about TEP.

A. The Issue of Feasibility.

1. The first and simplest question is "Can TEP be used at all?" Will the equipment hold up -- will students remain interested in the program -- will they be able to go through it without a teacher being present -- will people and institutions support it?

The answer to all of these questions of feasibility is an overwhelming "yes."

Perhaps the strongest endorsement of TEP was the enthusiasm and continuing motivation of the trainees. They did not learn all that TEP tried to teach, but they never tired of it. When schedules conflicted, they came in at night and on weekends. In a majority of terminal interviews they said that TEP was better than a classroom teacher. TEP was "never impatient, never scolded, always allowed time to learn." It "never spent time going over what I already knew, because someone else didn't know it." No trainee quit on TEP. All said it was helpful (even when objective data

failed to reveal any evidence of this). The conclusion seems irrefutable; students will go through the TEP program, will try to learn, and will feel it a worthwhile experience.

A second aspect of feasibility concerns the hardware. Again, there seems to be no doubt that maintenance problems are of minor concern. Malfunctions were trivial and have largely been corrected in later versions of the program. No site required technical assistance beyond what any language lab could provide. Perhaps more to the point, any TEP installation will learn very quickly how to correct the common problems -- no great technical sophistication is required. The equipment is <u>not</u> too complex for the developing nations. And it can be simplified.

There is no requirement for a master teacher, a skilled TEP technician, or an expert TESL/linguist. TEP requires a monitor to (1) get trainees oriented to the program, and (2) answer procedural questions during the first week or so. All sites agree that the counterparts could have carried out Phases B and C without assistance, if getting through the program were the only objective.

In the United States, programmed instruction has often been treated as a threat by members of the education establishment. The idea that one could learn without a teacher has been viewed as insidious. But the very novelty of the idea in the developing world seems to have overcome all "in-group in-securities." We can report, without challenge, that all visiting groups of teachers, administrators, professors or ministers, have been captivated by TEP, both in concept and in implementation.

2. Is TEP really self-instructional; are procedures sufficiently self-explanatory that trainees can go through the program without "live" instruction or assistance?

An important objective was to determine the manageability of the procedures, i.e., how well could the trainees follow the built-in instructions without the supervisor's assistance. The trainee must learn to operate several sets of controls; master the mechanics of many different types of exercises; manipulate Workbooks, Worksheets, Participation Forms and Answer Keys; and perform the many related functions that the lessons require, all on the basis of the procedural instructions, built into the program itself.

Detailed records were maintained of the difficulties encountered by the trainees, on the questions asked, on the points at which they "got stuck," and on the specific mistakes in procedure observed by the supervisor.

In the earlier tryouts, trainees experienced difficulty at the beginning of the course. Based on this experience, the AIR technicians developed an Orientation Manual. In successive revisions, the Manual was successful in eliminating or reducing the initial confusions, and TEP can certainly be advertised as "self-instructional" in its present form. In the experimental evaluations, once the trainees had learned how to use the various components of the system, they developed great facility in following the built-in directions. In working through hundreds of exercises, they encountered only occasional procedural problems; and even these problems can probably be eliminated through minor program adjustments. One of the reasons that self-instructional programs must be tried out and edited so many times is that it is quite impossible to predict all of the mistakes that individuals are apt

to make in responding to seemingly clear-cut instructions. To achieve the goal of programming a course in which it is almost impossible for trainees to go wrong, continuing adjustments over a long period of time are required. Typically, this process of adjustment continues even after the program has been put into operational use.

Against this background, the effectiveness of the TEP instructions must be rated as exceptionally high. After the first few days of the course, the trainees were able to proceed through the exercises for hours or days at a clip without difficulties or outside assistance. Procedurally, TEP is ready for operational use.

3. Is the presentation sufficiently interesting to hold trainees' attention; do they continue to work without periodic interaction with a teacher or supervisor?

Another objective of the tryouts was to determine the acceptability of a teaching system like TEP to groups of teachers or teacher-trainees in three quite different countries. Would an auto-instructional program hold their attention for an extended period of time? Would the trainees expend the effort necessary to profit from the program? On attitudinal grounds alone, would the program work in India, Singapore, and Venezuela?

The finding was that the answer to all of the above questions is an unqualified yes. The reaction of the trainees to the course was one of continued enthusiasm, and their motivation remained high throughout. The trainees were told at the beginning of the course that they were free to take breaks whenever they wished, but the breaks actually taken were infrequent and of short duration. Although no records were kept of the length of the breaks, the supervisors estimated that of 24 hours scheduled each week, more than 23 hours were actually spent at the consoles.

Of course, some parts of the course were better-liked by the trainees than others. The section on supra-segmental phonemes produced visible signs of frustration and displeasure. One trainee felt that some of the programmed exercises in Workbook II were boring, and another felt that too much outside reading was required in Workbook V. Taken as a whole, however, the course was highly appealing to the trainees, and their attitudinal response and motivation were considered to be excellent.

B. <u>The Issue of Effectiveness</u>.

1. Is the content learned?

The most direct measure is via the Progress Checks which presented "criterion frames" from the TEP materials. Averaged over all sites and all tryouts, TEP trainees made 80% correct responses on the 20 Progress Checks which were administered at approximately equal intervals throughout the program. This figure (80%) is low enough to suggest the necessity of some revision but high enough to argue for revision rather than starting from scratch.

2. Which sections of the program are most adequate, which most in need of revision?

TEP requires further development before its true potential can be realized; this fact should be not at all surprising. There are specific problems which should be corrected before the developing nations are asked to invest their limited funds in TEP equipment and materials. Some of the needed remedies are underway or may already be accomplished by ELS -- our report concerns the program delivered to us in December 1967. There are some important content problems with Grammar and Methodology. Both sections

need to be reviewed by competent specialists, and brought up to date. Phonology is less of a problem, but could benefit from a revision. The entire program needs another re-write, with particular attention to style and internal consistency.[10] Films need to be re-shot with improvements in general appeal and technical quality. The console with its projector and recorder is not up to the current state of the art. More specifically:

a. The Grammar Workbook is really made up of two independent sections, and is apparently intended to present two of the several modern approaches to grammar. The first section is supposed to teach a modern "descriptive" approach, but some reviewing specialists have found it a rather peculiar mixture of descriptive and traditional grammar.[11] Trainees liked the section. They said it was a very well organized presentation "except for all the unfamiliar terms." We take this to mean that they liked the review of the grammar they had learned in school, but that they didn't really see that this was supposed to be a new and better approach. The section might be usable with minor revisions. Transformational grammar is difficult, and its role in a TESOL course is not clear. Only a few of the trainees were very interested in it, and they had no plans to make use of it. The specialist in transformational grammar at RELC found the TEP section to be some years out of date. The presentation of "morphemes" (central to the whole section) was inadequate and inaccurate. The "transformational" section (also the "descriptive" section) suffered badly from inconsistencies. The Grammar

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[10] All errors and inconsistencies have been reported to the publisher of TEP.

[11] One reviewer finds it "the best account of modern grammar available."

Workbook makes use of a few tapes to teach past and plural endings. In the interest of modularizing TEP it would be well to eliminate all use of films and tapes in this workbook so that the section would not be tied to any equipment. The existing tape lessons are redundant in any case, having been covered in Phonology. ELS is currently rewriting the Grammar Workbook, and hopefully all the problems mentioned above will be corrected in the new version.

b. The Methodology Workbook is at once the most important and the weakest section of TEP. The research staff and host country specialists have found problems with: (1) the TESOL method taught in TEP, (2) the situations and examples used in teaching the method, and (3) the general organization of the TEP presentation of methodology.

1) The TESOL method widely favored in much of the world is the "situational" approach. This approach may be thought of as incorporating three stages: The first stage is the introduction of new material by the teacher (aimed at producing motivation in the students). The second stage involves drilling on new sounds, vocabulary, and structures (response learning). The third stage is practice in using the new responses in "realistic situations" (learning appropriate stimulus-response associations). All stages are considered essential, but TEP presents only stage 2.

2) By inappropriate situations and examples we refer mainly to two problems: First, in all developing countries, teachers are concerned with teaching large classes of children. They find it difficult to generalize to their own situations from the

small classes of adults in TEP. Second, use of English 900 as a sample text was not very successful. Trainees did not generalize the principles to their own syllabus materials. This section might be better replaced by a locally produced module based on ELS-produced guidelines.

3) By "organization" problems with the Methodology Workbook we mean problems with programming of the presentation, as opposed to the content problems discussed under 1 and 2. Methodology seems to consist of infinite repetitions of almost (but not quite) identical drills. There are so many separate lessons that it is hard to tell whether one has seen a particular drill before or not. At the same time there is very little attempt to pull it all together, that is, to show the complete process starting with the introduction of new material, and following it through the final stage. TEP lesson planning was largely dismissed by trainees as being too time consuming. What trainees would like is a set of reference charts they could take back to school, including overall lesson planning guides, explanations of each type of drill, and lots and lots of examples.

c. The major remaining section of TEP, Phonology, was everywhere well received. Potential use of this section would be increased enormously if use of the projector were not required; the RELC, in fact, replaced the ten Phonology films with tapes and printed materials. The final part on stress, pitch and juncture was too difficult, but ELS indicates that it is being rewritten. Phonology could always be improved by tailoring it to the local situation, but this is the kind of modification which can be made on site. Major variants, as the British pronunciation version planned by

ELS are appropriate to a central developer (and the British version would certainly be preferred in India, Singapore, Malaysia, and Nigeria, of the countries in which we've worked); but, versions which differ between Indonesia and Malaysia could only be developed profitably in Southeast Asia. At present, the Phonology section is a strong "plus" in TEP; in many countries of the world it could be the only available "model" of a native speaker of English for future English teachers.

d. The remaining sections of TEP should be mentioned briefly. "Language Learning" was considered interesting, and more material of this kind might be included. Additions could be made to Workbook III, or better yet, they could be distributed throughout Workbook I, II, and IV. The section on drawing stick figures has been uniformly liked and applied by all trainees. It may well be the most successful section of the course, and ELS might publish it as a separate module. The sections on testing, audio-visual aids, etc. were too short to have much impact. These are major subject areas in their own rights, and we have no constructive suggestions on how to solve the problem of teaching complex subjects in a very short time. The section on guided outside reading didn't hurt anyone, and some found it interesting. We would not recommend any changes.

3. Is actual teaching behavior in the classroom improved, or affected at all by TEP?

Opportunities to observe post-TEP classroom performance were limited. In Caracas, trainees were not yet teachers; in India, the teachers were scattered throughout several provinces. Singapore provided the best opportunity for observation; excerpts from the observer's report (Dr. D.P. Horst) follow:

During the period 6 May through 3 June 1969 I conducted classroom observations of the six TEP Phase C trainees. Each trainee was first visited once to arrange scheduling, and to examine her lesson plans. Subsequently, four of the trainees were each observed on two separate days. Observation periods varied from one-half hour to one hour. The remaining two trainees were each observed for one session of one hour.

The following summary of the classroom observations is intended to indicate the extent to which TEP changed the teachers' behavior, and at the same time to bring out the kind of behaviors that I feel are most relevant in evaluating teacher performance in Singapore classrooms.

After observing the trainees I discussed TEP with them, asking them which parts were proving useful. Their comments are also summarized in the following section.

a. Phonology. TEP devotes roughly forty hours to presenting all of the English segmental phonemes (Trager & Smith) plus the supra-segmental phonemes "stress" and "pitch". Since the trainees had spoken English for many years prior to taking TEP one would not expect major changes in pronunciation to result from forty hours of practice. One might, however, expect that TEP would make trainees conscious of problem phonemes. Since all the trainees were quite good at producing these problem phonemes in the TEP context one might hope that through conscious effort they would produce them correctly in classroom drills. In general this did not happen. For example, the plural ending /-z/ was pronounced /-s/ by the trainees in the classroom even though they had successfully completed many TEP drills on this problem. An interesting confusion occurred in one case where the trainee was carefully pronouncing "purse" as /porz/.

Intonation was also taught incorrectly by some teachers. In one extreme example, a major part of a class period was spent with children chanting negative questions. In all other respects the drill was well conducted, but the children were using "statement" intonation.

In discussions with the trainees only two said they felt phonology had been helpful. They were among the best in pronunciation, both in TEP and in the classroom, and this suggests that the section is more helpful in "polishing" good pronunciation than in modifying overlearned poor pronunciation.

b. Grammar. There was little opportunity to make any evaluation of the effectiveness of Grammar. All trainees had a pre-TEP command of English grammar that would compare favorably with American high school students. The typical primary school lesson material ("Is this a book?") is no challenge for them. Only one trainee was teaching a class specifically labled "grammar." I observed lessons on "who - whom" and on affirmative and negative questions. The content and organization was prescribed in the Singapore teachers' manual. The trainee made a few errors in her examples, but for a traditional grammar lesson I felt it was well presented. I doubt if any generalized grammar course would have helped, although a review of the specific topics for the teacher might have been useful while she was preparing the lesson.

In discussions none of the teachers felt that grammar had been very helpful.

c. Methodology. All six trainees were making use of drills that they learned in TEP. Pattern practice and chaining drills were used by most trainees. Cued transformation drills were used where appropriate. Some trainees have tried minimal pairs drills, but trainees are not confident of their ability to select the proper words.

All teachers had brief but carefully prepared lesson plans. These plans are required by the Ministry of Education, which prescribes the format. In all cases the lessons appeared to be well paced, with considerable variety, extensive use of visual aids, and as much active and individual participation as practicable in a class of forty students. Written work complemented oral drills, and classes were, in most cases divided into slow, medium, and fast groups. Games or other activities were used to maintain interest and to provide practice in "realistic" situations.

On the negative side I would list the following points:

1) There was not much individual practice, as classes were too large.

2) There were no special techniques for the slow learners.

3) Only the fastest students could keep up with the syllabus.

4) The teachers were rather stern, and gave little positive reinforcement. (Only one was observably fond of the children.)

d. Audio-visual aids. All trainees had made use of "stick figures." One reported that her students tired of them quickly and wanted more elaborate drawings. This was the only negative comment on this section. Visual aids are emphasized in the Singapore T.T.C., and generally the trainees are beyond the level of the TEP section. Tape recorders, film projectors and other mechanical devices are available.

e. Testing. Singapore testing procedures, though far from optimal, are clearly established, following the British model. Trainees reported that the TEP section was not useful.

In summary, it is evident that the Singapore trainees did learn and put to use several drills that they encountered for the first time in TEP. To expect more profound changes from a 12-week course given to experienced teachers is probably not realistic. TEP's effect on beginning teachers cannot be determined from our data.

C. The Issue of Alternatives.

1. How much does TEP cost? How does it compare with traditional classroom instruction?

One of the objectives of the AIR project was to develop cost data for TEP and for any alternative to which TEP might reasonably be compared. An unfortunate truth, known from the beginning, is that TEP can be costed, while to do so for most traditional approaches is extremely difficult if possible at all. We cannot claim to have solved this problem. Teacher salaries are available, but the administrative overhead of a teaching institution is seldom known. The life expectancy of a teacher is computable, but the changes in the teacher's effectiveness are not. Our cost data are notoriously incomplete, and clearly not adequate for any definitive analysis of cost/benefits. Yet, it seems clear from the data we do have that TEP can compete on a cost basis with any teaching situation which involves a live teacher. Appendix C presents a detailed analysis of cost considerations for a

TEP installation and a Certificate course at the Central Institute for English. From this analysis and from the fragmentary data collected in Venezuela, it appears that TEP can be costed at less than $100 per trainee while most comparable courses (comparable in student qualifications and level of subject matter) will cost somewhat more than that.

It is recognized, of course, that TEP will generally represent a new investment, while continuing a program with fully amortized buildings and equipment will represent an apparent economy. However, in any planned expansion of TESL capacity, TEP merits consideration.

2. Is TEP as effective as available alternatives in producing teachers?

Again, our data are necessarily incomplete. A full answer to the question would require a longitudinal study of many years' duration. But in the comparisons already reported, TEP seems as effective as the program with which it was compared.

One further comment seems relevant. It is a fundamental error to assume that a realistic alternative always exists. In many parts of the world, there are almost no options available. In Indonesia and Laos, for example, there is no supply of native speakers of English that would permit the desired expansion in TESL. TEP is one way of providing a native speaker as instructor wherever there is a power supply to drive a tape recorder.

3. How and where can TEP be best used?

It is assumed that the revisions being made by ELS will result in a program which is superior to the one evaluated and that the specific problems noted in the preceding sections will have been corrected. The recommendations which follow concern the uses to which TEP might be put.

a. TEP's greatest contribution can be made in those nations or regions where English instruction is least developed. In the Southeast Asian countries, Singapore, the site of our tryouts, is the least likely user of TEP. The Singapore Teacher Training College gives some TESOL training to all teachers who might be candidates for TEP and it is always difficult to replace an existing program which appears adequate. The same situation exists to some extent in the Philippines, but because of the size of their educational system, there are many places where TEP could be put to good use. But the real needs are to be found in Laos and Indonesia where the shortage of English teachers is critical and recognized by the Ministries to be so.

In Venezuela, another tryout site, the need for TEP is not in Caracas but in the provinces. And this will be true in most of Central and South America, where the English-teaching resources are typically collected in the capitol city; regional TEP centers could help all of these countries. Similarly in India, if TEP is to be used at all, it will be in the less developed areas, not in the principal cities nor at the major institutions.

b. TEP is an integrated program; its designers wanted to cover all of TESL instruction in a single package. But paradoxically, one of TEP's real strengths is in its modular nature; the Phonology section can stand alone, for example. So can Grammar and Methodology. TEP should be viewed as a series; if one country wants to use Phonology only, such use should be encouraged. If a teaching institution wants to use the Grammar module to replace one of its courses (an alternative evaluated in Caracas), such use is highly desirable. At the present time, Phonology is far more attractive to many potential users than is TEP as a whole, and much can be gained by partial adoption.

c. A stripped-down version of TEP, consisting of tapes and workbooks should be considered. TEP without console and films is a far less expensive program which retains much of the value of the complete installation. And in addition, the stripped-down model is portable, which might have considerable value in many countries.

d. Local modifications, such as extra material on the phonological problems particular to one country, should be encouraged. The Singapore version of Phonology, based on a contrastive analysis of the first languages of the six countries of SEAMES, is a good example of what can be done to build on a central program, the specifics necessary for optimal use in many settings. In adopting TEP, the user should assume that continual revision by his staff will result in a superior program, tailor-made to his own institution's needs.

VI. A FINAL WORD

One effect of a careful evaluation is to reveal the specific weaknesses which inevitably exist in a program of instruction. The AIR evaluation of TEP was no exception: hundreds of errors, inconsistencies, ambiguous explanations, or difficult sequences were noted, recorded and reported to ELS. In the course of conducting such a fine-grained inspection of the program, it seemed at times that TEP must be a hopeless failure and one was occasionally tempted to recommend starting over from scratch. But with what was TEP being compared? Where was the human teacher who never erred, never confused his students, never gave ambiguous instructions; what institution, using what materials, produced students who made no errors in phonology?

TEP has been subjected to very close scrutiny; we believe that despite its revealed flaws, it will compare favorably with alternative programs which are inspected with equal care.

The data reviewed in this report support the following assertions, none of which are trivial:

1. TEP can produce measurable changes in some of the component skills of TESL.
2. It can do this without the presence of a linguist or a skilled teacher.
3. It engages and holds the interest of teachers and students preparing for teaching; this holds for trainees of remarkably diverse backgrounds.
4. Despite its space-age appearance, TEP is relatively simple in terms of its mechanical and electronic components; it is no more complex to maintain than a language lab.
5. TEP is no more expensive than traditional classroom approaches to TESL. And it is being made less expensive in its newer version.

6. TEP is flexible; its components can stand alone with very minor modifications.

7. The program is amenable to local modifications which increase its responsiveness to problems peculiar to a particular first language.

All in all, TEP is a workable alternative which warrants serious consideration for a variety of purposes. Its development should continue; it can be made better. But it can be used with profit as it now stands in many places in the world.

APPENDIX A

AN OUTLINE DESCRIPTION OF TEP

TEP (Teacher Education Program) is a course for training teachers of English as a second language. Basically it consists of a set of programmed textbooks, but extensive use is made of audio tapes, and sound movie films. In going through the course, each teacher-trainee works at a specially designed TEP console which includes his own projector and tape recorder, and provides him with a degree of isolation from the rest of the room.

I. Physical Components of TEP

A. Printed Text

1. There are 26 volumes of printed text.
2. These volumes are organized into 5 sections which are called "Workbooks."
3. The Workbooks give directions for proceeding through the course, present some of the content material, and include periodic self-tests on the material.
4. One volume each of Workbooks I, II, IV and V is devoted to an Answer Key, covering the exercises associated with the other volumes of the Workbook.

B. Movie Films

1. TEP uses 163 cartridge loaded, 8mm sound movie films.
2. Various films run from 2 or 3 minutes, up to 10 to 20 minutes.
3. Ten Films are used in presenting Phonology.
4. The remaining 153 films are devoted to Teaching Techniques.

C. Audio Tapes

1. TEP uses 140 cartridge loaded tapes.
2. The majority of the tapes are used in Teaching Techniques, or Phonology lessons.
3. Tapes are used in presenting new material as well as exercises. Some exercises require the teacher trainee to record his own voice.

D. Teacher Trainee Kit

1. The kit includes the Worksheets on which all written exercises are performed.
2. A loose-leaf binder is included that will hold all the Worksheets for one volume of text.
3. A mirror, and other training aids are also provided.

E. Reference Library

1. 28 Volumes on linguistics, methodology, phonology and grammar are included.
2. These books are referenced at various points in the TEP course.

F. TEP Console consists of:

1. Shell: The fiberglass shell is designed to provide a measure of privacy for the trainee. It incorporates:
   a) Working space
   b) Storage space
   c) Two speakers
   d) Ventilating fan
2. Movie Projector
   a) The projector accepts cartridge loaded, 8mm sound movie film.
   b) No threading or rewinding is required.
3. Tape recorder
   a) A two track (trainee and master) recorder is used.
   b) The recorder is cartridge loaded, and requires no threading. It does have to be rewound.
4. Headset
   a) Ear phones are proveded (that may be used instead of the Shell speakers) for listening to either tapes or films.
   b) A microphone permits student recording.
5. Study Lamp

II. Content of the TEP Course (Figures in parentheses are approximate percentages of total course time)

A. Workbook I, English Phonology (20%)

1. English phonemes:

   a) Identification and discrimination exercises
   b) Articulation (description and practice)
   c) Phonemic transcription

2. Suprasegmental phones: Stress, pitch and juncture.

B. Workbook II, English Grammar (33%)

1. The processes that signal grammatical meaning:

   a) Word order
   b) Inflection
   c) Use of function words
   d) Intonation
   e) Derivation

2. The Structure of English Sentences

   a) Basic rules and formulas
   b) Transformation of base formulas

C. Workbook III, Language Learning (2%)

1. Characteristics of language

2. Factors in second language learning

D. Workbook IV, Classroom Teaching (30%)

1. Basic techniques in oral drills

   a) Repetition drills
   b) Correction of errors
   c) Explanation of meaning

2. Levels of Control in Oral Drills
   (from Repetition Drills to Guided Independent Conversation)

3. Levels of Control in Teaching Reading
   (from Oral Reading to Guided Independent Reading)

4. Levels of Control in Teaching Writing
   (from Simple Dictation to Guided Independent Writing)

5. Special techniques for teaching pronunciation and grammar

   a) Minimal Pair Drills
   b) Pattern Practice (substitution) Drills

6. Using a set of standard textbooks

E. Workbook V

1. Volume 1, General Teaching Techniques

   a) Correction techniques for writing practice
   b) Lesson planning
   c) Practicing appropriate teacher behavior
   d) Learning to draw simple figures and objects

2. Volume 2, Special Teaching Skills (5%)

   a) Testing
   b) Visual aids
   c) Audio aids
   d) Supplementary materials and outside readers

3. Guide to reading in the TEP Reference Library (5%)

PROGRESS CHECK #7

No tape; test booklet only.

In the utterances below, circle each noun determiner and underline the noun which each determiner accompanies.

1. Every student must supply an answer.
2. Our parents visited their friends.
3. My friend has no car.
4. Is this your pen?

In the utterances below, circle each preposition, underline the rest of the prepositional phrase, and put a check (✓) over the word the prepositional phrase modifies.

5. Our friends stayed for two weeks.
6. The paper with all the mistakes is not acceptable.
7. The hole in the road needs fixing.

In the utterances below, underline each adverb; in the space preceding the utterance, classify each adverb by writing either place, manner, frequency or time.

8. _____ Alice drives cautiously.
9. _____ His wife often oversleeps.
10. _____ I sleep downstairs

In the utterances below, circle each adjective and underline the word which the adjective modifies.

11. The long movie had a funny ending.
12. The soft music makes our dinner enjoyable.
13. Your detailed explanation helped us solve a difficult problem.

For each adjective below, write the comparative and superlative forms.

	(Comparative)	(Superlative)
14. interesting	_____	
15. clean	_____	
16. poor	_____	
17. difficult	_____	

Identify each of the underlined words in the following utterances by writing one of the terms or descriptions given in the list to the right.

18. Who is that man? _____
19. Both Helen and Bob accompanied the children to the zoo. _____
20. After we finished the examinations we took a long holiday. _____
21. There is no one in the room. _____
22. Let's go. _____
23. I say, can you see the road? _____

List

replacement of performer
call for attention
inclusive request
interrogative
leveler
noun determiner
includer

In the utterances below, circle each adjective or adverb and underline any accompanying intensifier.

24. That dog can run really fast.
25. Her hair is rather grey.
26. You are absolutely right.

Content words can be classified into four parts of speech. These are:

27. _____

28. _____

29. _____

30. _____

APPENDIX C

TEACHER TRAINING COSTS:
TEP AND THE CENTRAL INSTITUTE OF ENGLISH IN HYDERABAD

A. Cost of a TEP Installation. While TEP can be costed rather precisely, there are several factors which argue against a single cost per trainee figure. First, several configurations are possible. Second, some changes in TEP components are being introduced. Finally, the life of each component can only be estimated.

An aspect of "possible configurations" is that TEP may be implemented in several ways. Despite the novel appearance of the fiberglass console, it is not an essential component of the program and there are several ways of using the equipment without this console. The essential hardware includes film projector, a tape recorder, and headset or speaker and the cost of the console need not be computed in calculating total TEP operational costs. The projector must be suitable for the TEP film cartridges but the tape recorder can be any type of dual track machine. Where a language lab exists, the TEP configuration can consist of the available lab equipment with only the addition of the projector. The essential equipment can be set up on tables or desks. If isolation for the trainee is preferred, an adequate study carrel can be built of wood as in language lab type booths. It is the programmed materials that are the important part of TEP and any convenient way of presenting these materials may be considered. Since a projector, tape recorder, headset and a booth could be purchased for less than $1,000, this would be half the ELS $2,000 price for the existing TEP fiberglass console and its components.

As for the cost of the best type of hardware, ELS is planning a new system, and it is necessary to take this into consideration when defining costs. The major change is replacing the Fairchild system with the Zeiss projector, costing $590, and the Panacolor films. The Panacolor films would cost about $3,600, which is less than half the cost of the existing Fairchild films. In addition, there can be reductions in software costs if worksheets are made reusable as suggested by ELS. This can be done by covering the worksheet with a piece of acetate and marking with a grease pencil. After each exercise, the score is recorded and the acetate sheet is wiped clean. The only consumable items would then be pencils and score sheets. Also, the current cost of printed materials is high because of the experimental nature of TEP; when large printings are made, the unit cost should be greatly reduced.

The equipment changes can make an appreciable difference. Below, the actual costs of the 3-console installations used at all three evaluation sites are compared to the apparent costs of identical installations using the Zeiss projector, the Panacolor films and a wood carrel replacing the fiberglass console.

Item	Present System	New System
3 consoles with Fairchild projector, tape deck, headset	$6,000	$ -
3 carrels with Zeiss projector, tape recorder, headset	-	2,400
1 set of films	8,150	3,600
3 sets of tapes	2,055	2,055
3 sets of workbooks	780	780
2 reference libraries	150	150
6 trainee kits	300	300
1 set of ear phones	38	38
	$17,473	$9,323

To these basic costs, the following types of costs arose in our studies:

1. Floor space, storage shelves or cabinets for storing TEP materials.
2. Air conditioning in those areas where required. It may not be required if films can be kept dry in a dehumidified storage cabinet or if classrooms normally are not air conditioned.
3. Extra equipment in those areas where required: (a) generator for additional power (equipment is 110 volts and a console needs 250 watts at peak draw); (b) a constant voltage transformer if voltage fluctuates at sites. These have only been needed in India.
4. Personnel: (a) monitor for first few days; (b) advisor available possibly one day a week; (c) electronic technician as needed for repairs and possibly during first few days if monitor cannot handle minor adjustments.
5. Replacement of parts: (a) projector bulbs, 8 volt, 50 watts ($8.00 in U.S.); (b) study lamp bulbs; (c) repair of films and tapes with splicing materials; (d) typing and duplication of printed materials; (e) postage costs for materials supplied from U.S., if necessary (if worksheets are made reusable and pencils supplied locally no other materials should be required).

Our estimate of the effective life of each component is as follows:

Fiberglass console	Indefinite
Projector	6-7 years
Tape recorder	10 years
Films (Fairchild)	5 years
Audio tapes	6-10 years
Workbooks	2-4 years
Reference books	6-10 years

While some economies would result from a larger installation, in the following analysis we will use a 3-booth installation as the basis for deriving a per-trainee cost of TEP.

1.	**Basic Equipment**		
	3 booths, projectors, tape recorders, headsets	$ 2,400	
	1 set Panacolor films	3,600	
	3 sets tapes	2,055	
	6 sets workbooks and reusable worksheets	2,160	
	2 reference libraries	150	
	Spare parts, bulbs, etc.	255	
	Installation costs	300	
		$10,920	
	Assuming replacement after seven years, the yearly cost is		$1,560
2.	**Personnel**		
	Salary, part-time monitor		500
	Monitor training (2 months)		300
3.	**Other**		
	Building		23
	Electricity		144
	Total yearly cost		$2,527

With 2 trainees (each working 4 hours per day) per console and 4 courses per year, a 3-console installation would show costs of $2,527/24 or $105 per trainee. We believe this to be a quite conservative estimate, in the sense that it assumes no intent to cut costs such as assigning 3 trainees per console, using the consoles in the evenings and during weekends, etc. Using the same assumptions, a 5-console installation would cost out at $99 per trainee. In the 3 console example, assigning 3 trainees per console (and adding the costs of workbooks, worksheets, another reference library, etc.) would give a per trainee cost of $75.

In summary, it seems quite possible to keep TEP costs at less than $100 per trainee.

B. Costs at the Central Institute of English. The Central Institute of English maintains a professional staff of 18 and an administrative staff of 45, in addition to the director of the Institute and visiting staff members. The professional staff has both teaching and research responsibilities, and it is estimated that each staff member divides his time equally between the two. The Institute can accept up to 60 students at a time, this limit being set primarily by hostel and classroom space limitations. It is theoretically possible, therefore, for the Institute to train 180 teachers per year, i.e., three 4-month courses could be scheduled each year. In actual practice, the Institute gives two 4-month Certificate Courses, one 9-month Diploma Course, and a 4- to 6-week summer course each year.

The average monthly salary of a Professor at CIE is $177. The average salary of a Reader is $158.40 per month, and the average salary of a Lecturer is $107.33. The breakdown of the staff is as follows: four Professors, six Readers and eight Lecturers. The total monthly cost of the professional staff is $2,516.04; the total monthly cost of the administrative staff is $1,680. Assuming that 75% of the administrative function is teaching related, and employing the 50% estimate for the professional staff, the total personnel cost related to teaching activities comes to $2,518 per month, or $30,216 per year.

The building space required to house the administrative and teaching units (including library space) is 17,325 square ft. at a construction cost of Rs. 24.80 per square ft., or a total cost of $57,288. Although it is difficult to determine what portion of the building costs should be allocated to teaching and what portion to research, it seems reasonable to allocate building costs in the same percentages as administrative personnel costs, i.e., 25% to research and 75% to teaching. The building costs for the teaching efforts at the CIE would therefore be approximately $43,000. Building depreciation is figured at 2 1/2% per year. Hostel space is not included in the above building cost figures, since this factor would be the same for any program held at the Institute.

As a part of the CIE Certificate Course, students are required to do some amount of language laboratory work. The Institute is in the process of replacing their present 8-booth language laboratory with a 16-both unit. The cost of this unit, F.O.B. London, is $9,600. This figure includes spare parts for the unit, and one 600 ft. reel of tape per unit. Tapes for lesson materials are not included. The estimated life span of the language laboratory components is identical to that of the corresponding TEP components. An additional tape recorder for recording lesson materials and a constant-voltage transformer are necessary pieces of additional equipment for the operational use of the language laboratory.

The electricity charges for the administrative and classroom buildings at CIE are approximately $20 per month. Replacement of hardware and software are thought to be approximately the same as those reported for TEP. The trainee time required for the CIE Certificate Course is four months.

Assuming three Certificate Courses per year, with 60 students enrolled in each course, the costs for each year would be as follows:

a. Building costs ($43,000 x .025)	$ 1,075
b. Language laboratory costs (Based on 7-year replacement -- $9,600/7)	1,371
c. Language laboratory tapes (Based on 7-year replacement and $8 original cost for 200 tapes -- $1,600/7)	229
d. Electricity	240
e. Personnel costs	30,216
Total costs for one year, 180 students	$33,131

Cost per student $184.06

It appears that the recurrent costs of TEP can be considerably lower than the costs of the CIE Certificate Course. It must be pointed out, however, that this is only the basic cost of turning out a trained teacher, and says nothing about the curriculum of the courses. In fact, CIE teaches more subjects to its students than are covered in TEP, so that while the goals of the two are the same, their relative paths are somewhat different. Then, too, the costs of TEP are easy to ascertain, being primarily tied to the costs of equipment, electricity, specified personnel costs, etc. The cost figures for CIE, on the other hand, are sometimes arbitrary, as in the case of percentage of time spent teaching by a staff member. In the overall analysis, however, it still appears that TEP would be the cheaper of the two in terms of actual dollar costs per student trained.

APPENDIX D

PROJECT PERSONNEL

Dr. Paul A. Schwarz was Principal Investigator for the TEP Evaluation Project. He designed the study, selected the field staff and supervised all aspects of the study until mid-1968 when he relinquished overall responsibility to:

Dr. Robert E. Krug, who saw the project through to completion and wrote the Final Report, which leans heavily on the reports written by the three Field Supervisors:

Dr. Donald P. Horst, in Singapore,
Mr. William B. Owen, in Hyderabad, and
Mr. Donald E. Hulslander, in Caracas.

In the Pittsburgh Office,

Dr. David J. Klaus was in charge of review and modifications to TEP. Dr. Klaus visited both India and Singapore, assisting the field supervisors with between-tryout modifications.

Mrs. Ronya J. Sallade was the principal link, both technical and administrative, between the field and home-office staffs and between both staffs and AID and ELS, until she left AIR in May 1969.

Miss Nancy G. Tower and Mrs. Ann B. Klaus were principal item writers for the Skills Inventory. Mrs. Sallade and Drs. Klaus and Krug also contributed to the SI.

Miss Judith E. Guarnieri took on all of the home-office functions in May 1969. In addition to the usual backstopping chores, she took on the added responsibility of keeping in touch with:

- a staff in Caracas, Hyderabad and Singapore,
- a sponsor in Washington, and
- a "home office" in Bangkok.

She typed and proofread all reports and generally held the project together during its last year.